

Appl. No. 10/709,552
Amdt. dated November 11, 2005
Reply to Office action of August 11, 2005

Amendments to the Claims:

Listing of Claims:

Claim 1 (currently amended) A method of forming a barrier layer
5 comprising:

providing a substrate having a cobalt silicide and at least a plug hole
exposing the cobalt silicide;

performing a chemical vapor deposition (CVD) process for forming a
Ti/TiN film, functioning as the barrier layer, onto the ~~substrate~~
10 cobalt silicide and inner walls of the plug hole;

performing an examination procedure, and if particles are detected in
the barrier layer, then performing step (d); and

performing a rework procedure comprising:

performing ~~[[an]]~~ a wet etching process to remove the barrier
15 layer, the wet etching process being implemented with an acid
solution comprising phosphoric acid (H₃PO₄), nitric acid
(HNO₃), acetic acid (CH₃COOH), and water (H₂O), wherein
the ratio of phosphoric acid, nitric acid, acetic acid, and water
in the acid solution is between
20 (38-41):(1-1.5):(1.8-2.1):(2.8-3.2);

scrubbing the substrate with a scrubber machine for removing
the particles;

rinsing the substrate with a cleaning solution; and

performing another CVD process for forming another Ti/TiN film
25 onto the cobalt silicide and the inner walls of the plug hole.

Claims 2-4 (cancelled)

Appl. No. 10/709,552
Amdt. dated November 11, 2005
Reply to Office action of August 11, 2005

Claim 5 (original) The method of claim 1 wherein the cleaning solution is a sulfuric acid (H₂SO₄) solution.

Claim 6 (original) The method of claim 1 wherein the examination
5 procedure is performed for detecting the particles that influence electrical property.

Claim 7 (currently amended) A method of forming a barrier layer comprising:

- 10 providing a substrate having at least a conducting layer thereon;
- performing a chemical vapor deposition (CVD) process for forming a ~~barrier layer~~ Ti/TiN film onto the conducting layer;
- performing an examination procedure, and if particles are detected in the ~~barrier layer~~ Ti/TiN film, then performing step (d); and
- 15 performing a rework procedure comprising:
 - performing an etching process to remove the ~~barrier layer~~ Ti/TiN film;
 - scrubbing the substrate with a scrubber machine for removing the particles;
 - 20 rinsing the substrate with a cleaning solution; and
 - performing another CVD process for forming another ~~barrier layer~~ Ti/TiN film onto the conducting layer.

Claim 8 (cancelled)

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Claim 9 (original) The method of claim 7 wherein the conducting layer is a polysilicon layer.

Appl. No. 10/709,552
Amdt. dated November 11, 2005
Reply to Office action of August 11, 2005

Claim 10 (original) The method of claim 7 wherein the conducting layer is a silicide layer.

5 Claim 11 (original) The method of claim 7 wherein the conducting layer is a metal layer.

Claim 12 (original) The method of claim 7 wherein the etching process is a wet etching process.

10 Claim 13 (original) The method of claim 12 wherein the wet etching process is implemented with an acid solution comprising phosphoric acid (H_3PO_4), nitric acid (HNO_3), acetic acid (CH_3COOH), and water (H_2O).

15 Claim 14 (original) The method of claim 13 wherein the ratio of phosphoric acid, nitric acid, acetic acid, and water in the acid solution is between (38-41):(1-1.5):(1.8-2.1):(2.8-3.2).

Claim 15 (original) The method of claim 7 wherein the cleaning solution is a sulfuric acid.

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